NUCLEAR EXECUTIVE LEADERSHIP TRAINING

Integrated Safety Management:

"Moving to the Next Level"

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December 2008

Presentation Overview

NUCLEAR EXECUTIVE LEADERSHIP TRAINING

- History and Review of Integrated Safety Management
- ISMS Lessons Learned
- Integrated Management
- Open Discussion on Integrated Management
- Revitalization of ISM
  - DOE ISM Top Priorities
  - Safety Culture

ISM: History

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- 1996 – Safety Management Implementation Team Established
- 1996 – ISM Policy Issued
- 1996 – Independent Oversight utilized ISM framework for all ES&H inspections
- 1997 – 2000 – ISMS Initial Implementation Verified
- 2004 – ISMS Re-vitalization Initiated
- 2005 – ISMS Champions Designated
- 2006 – ISMS Workshops Restarted
- 2006 – ISMS Manual Issued
- 2007 – EFCOG/DOE Safety Culture Task Team Initiated

ISMS Program Objective

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Systematically integrate safety into management and work practices at all levels so that missions are accomplished while protecting workers, the public, and the environment. (DOE Policy 450.4)

Safety Management System

(Hierarchy of Components)

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Increasing level of detail

- Safety Management **Objective**
- Safety Management **Principles**
- Safety Management **Functions**
- Safety Management **Mechanisms**
- Safety Management **Responsibilities**
- Safety Management **Implementation**

DOE P 450.4
10-15-96

ISMS Goals

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- Define and implement an effective ISM system that meets the requirements of DEAR Clause 970.5223 and DOE M 450.4-1 (ISM Manual)
  - Incorporate safety into management and work practices at all levels
  - Address all types of work and hazards to ensure safety for workers, public and environment
  - Ensure continuous improvement

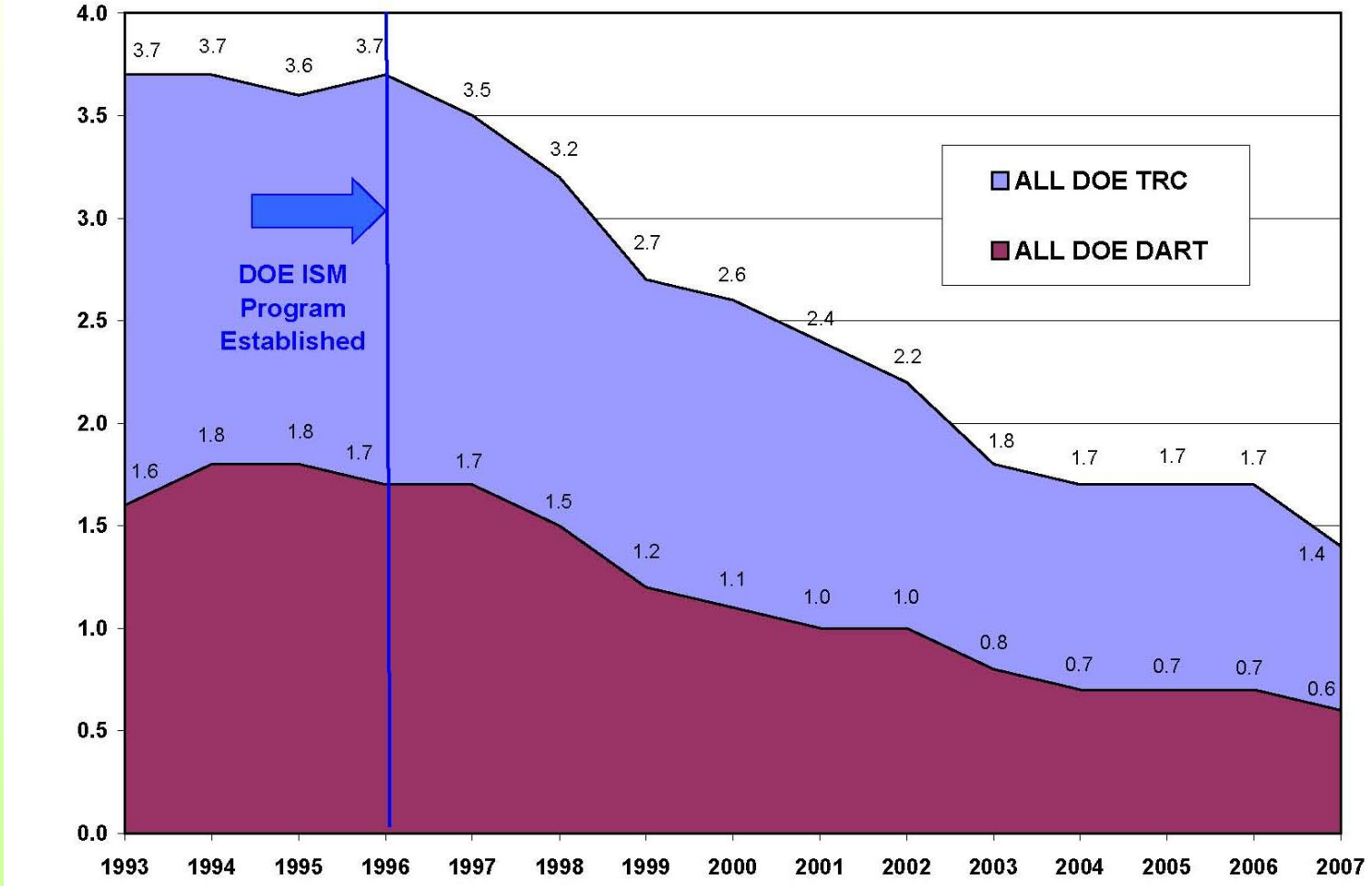
ISMS Guiding Principles

- Line Management Responsibility
- Clear Lines of Authority
- Competence Commensurate with Responsibilities
- Balanced Priorities
- Identification of Safety Standards
- Tailor Hazard Controls to Work
- Operations Authorization

ISMS Core Functions

- Define the Scope of Work
- Analyze the Hazards
- Develop and Implement Hazard Controls
- Perform Work within Controls
- Provide Feedback and Continuous Improvement

Improved Safety Performance with ISM Implementation



ISM: Lessons Learned Over the Years

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- Need to guard against complacency – to constantly invest energy and effort to improve – always on journey, never arrive
- Importance of human values and culture
- Need for leaders to model and reward desired behaviors
- Need to engage hearts and minds of workers
- Need to develop trust and an open dialogue
- Need to learn from weak signals and near misses
- Need for enduring framework, not flavor of the month

ISM: Lessons Learned From Major Events

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- Must learn valuable lessons from operating experience
- Can not allow routine deviations from established standards
- Budget and schedule pressures must not override safety
- Managers need to encourage employees to communicate safety concerns & differing professional opinions

ISM: Lessons Learned From Major Events

- Safety should focus more on planning and preventive actions
- Critical self-assessment & oversight is needed to find problems
- Corrective actions must address underlying causes of problems
- Must guard against complacency

ISM: Challenges

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- Move toward Integrated Management
- Strengthen Safety Culture
- Improve Work Planning and Control
- Make “Feedback and Improvement” more effective
- Sustain ISMS during contract transitions

Example ISM Implementation

Integrating ISMS Core Functions in Waste Retrieval:

INL AMWTP Transuranic storage Area

ISM

Integrating ISMS Core Functions in Waste Retrieval: INL AMWTP Transuranic storage Area

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Define the Scope of work

- Remove the soil, tarp & plywood covering the waste in a large retrieval enclosure
- Retrive the Waste Boxes and Drums

Integrating ISMS Core Functions in Waste Retrieval: INL AMWTP Transuranic storage Area

Analyze the hazards

- Numerous hazards including
  - Soil substance concerns
  - Unstable waste configurations
  - Horizontal waste configuration
  - Bulged containers
  - Container integrity
  - Radiological concerns

Integrating ISMS Core Functions in Waste Retrieval: INL AMWTP Transuranic storage Area

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Mitigating the Hazards

Mockups

- Horizontal retrieval fixtures
- Enhanced drum handling fixtures
- Drum picking attachment
- Box retrieval from known high contamination area

Integrating ISMS Core Functions in Waste Retrieval: INL AMWTP Transuranic storage Area

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Mitigating the hazards

Hazard: Horizontal & bulged drums

Mitigation: Procured & tested handling & lift fixtures

Result: Improved worker safety, Improved drum handling operation

Integrating ISMS Core Functions in Waste Retrieval: INL AMWTP Transuranic storage Area

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Perform the work

Operators utilize rolling stock, mechanical equipment, radiological and industrial safety, industrial health Instrumentation and misc. hand tools to accomplish soil removal & daily waste retrieval activities

Provide feedback

- Engagement & ownership at all levels
- Mock-ups
- Walk downs & discussions at all levels with all groups
- Lessons learned
- Post-job briefings

Integrating ISMS Core Functions in Waste Retrieval: INL AMWTP Transuranic storage Area

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Summary

Application of ISMS and Continuous improvement has contributed to increased retrieval rates thus increasing feed for characterization, the treatment facility and shipping

- Last six months of 2007 they retrieved 3,019 m3

- First six months of 2008 they retrieved 9,222 m3

Discussion

- Open Discussion on ISM System Implementation

Integrated Management

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Integrated Management

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- IM expands on 13 years of successful experiences with ISM
- IM is a broader approach to integrate:
  - Requirements, Mission/Functions
  - Roles & Responsibilities
  - Functional areas
  - Management systems
  - Mission-related areas
  - Types of Operations
  - Facility Life-Cycle
  - Reduce and Clarify interfaces

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Why is it worth the journey?

- Clearer Expectations
- Improved Accountability
- Better Coordination
- Improved Effectiveness and Efficiency
- Ensure Mission Success

Changes in the Departmental Directives that Move Us Towards Integrated Management

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IM and Departmental Directives

- Multiple directives prescribe management systems
- Phase 2 of Safety Directives Review Project seeks to improve meshing and integration of management systems directives
- A consistent and integrated approach to management is the most efficient and productive path to assuring mission success

Benefits of Integrated Management

- Single system can be used for work planning and control
- One work message can be built into communication tools
- Site wide awareness training (can include specific safety and security messages)
- Joint awareness campaign

Benefits of Integrated Management

- Safety and security team process can include other systems
- Response to audit findings can include joint response for safety, security, environment or other management system
- Site-wide improvement initiatives can be sponsored jointly
- 'Lessons learned' program can include safety, security & relevant management system

How Do We Get To IM

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- Review each management system to tailor & streamline requirements & standards
- Review each management system for a "best fit" organizational implementation
- Recognize DOE diversity – avoid "one size fits all" perception
- Encourage and reward prudent risk-taking

How Do We Get To IM, Cont.

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- Recognize that ISMS is risk-based, but DOE culture is risk-adverse
- Require each new program or management system to address cost-effectiveness and value added
- Field, Program Offices and HQ Communicate, Coordinate, Cooperate

Reported IM Initiatives from these Locations

- Laboratory Research (PNL, BNL)
- Science Systems (ANL/OR)
- Design Projects (NNSA-Y12)
- Waste Retrieval (INL)
- Chemical Management (PNL)
- Energy Efficiency and Renewable Energy (HQ)

Integrated Management
LANL Example

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LANL Example of IM: Integration of Environment, Safety & Security

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Why Integrate Environment, Safety & Security?

- DOE Order 450.1-4 requires sites to integrate EMS with ISMS
- Opportunities exist to leverage safety, security and environmental programs for mutual benefit
- Streamlining multiple requirements eases the burden on all systems

Dennis Hjeresen: Director Office of Risk Reduction

EMS Integration Actions at LANL

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- No separate work control system for environment
- Lab-wide EMS environmental awareness training includes specific safety and security messages
- Joint awareness campaign (environment, safety and security Posters)
- One work message built into communications tools

Safety for you, security for the nation, environment for our futures

Dennis Hjeresen: Director Office of Risk Reduction

EMS Integration Actions at LANL

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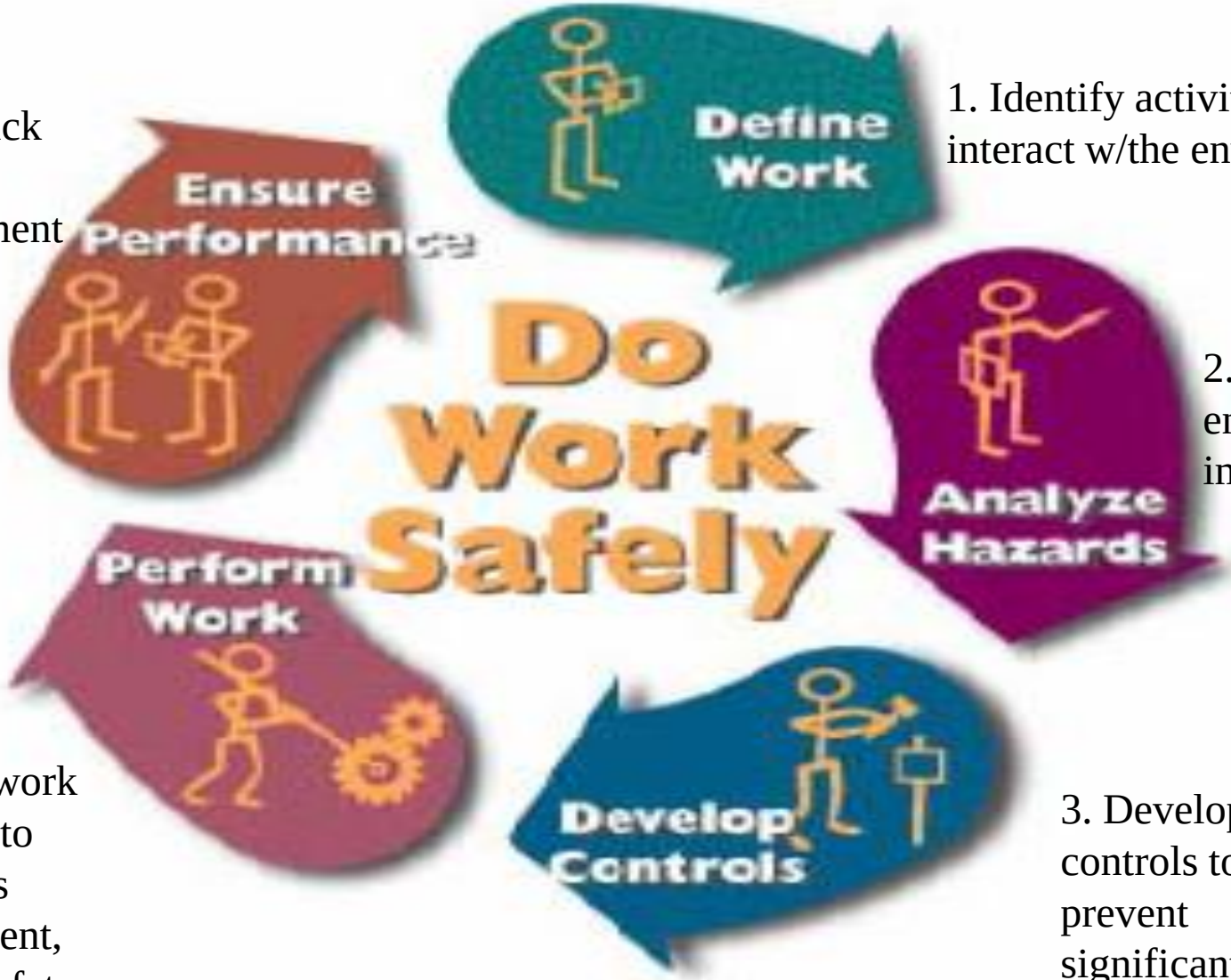
Equipment & Materials disposition program

- Crosses institutional lines (safety, security, procurement, HR, waste disposition, salvage etc.)
- Toolkit approach condenses lessons learned for field use
- Now Addressing root causes

Dennis Hjeresen: Director Office of Risk Reduction



1. Identify activities that interact w/the environment

2. Identify environmental impacts

3. Develop controls to prevent significant environmental impacts

4. Do the work according to procedures (environment, security, safety, etc.

5. Feedback and improvement

LANL Integrating Environment Safety and Security

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Integrated Safety Management
Safety Culture

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Safety is on the critical path to mission.

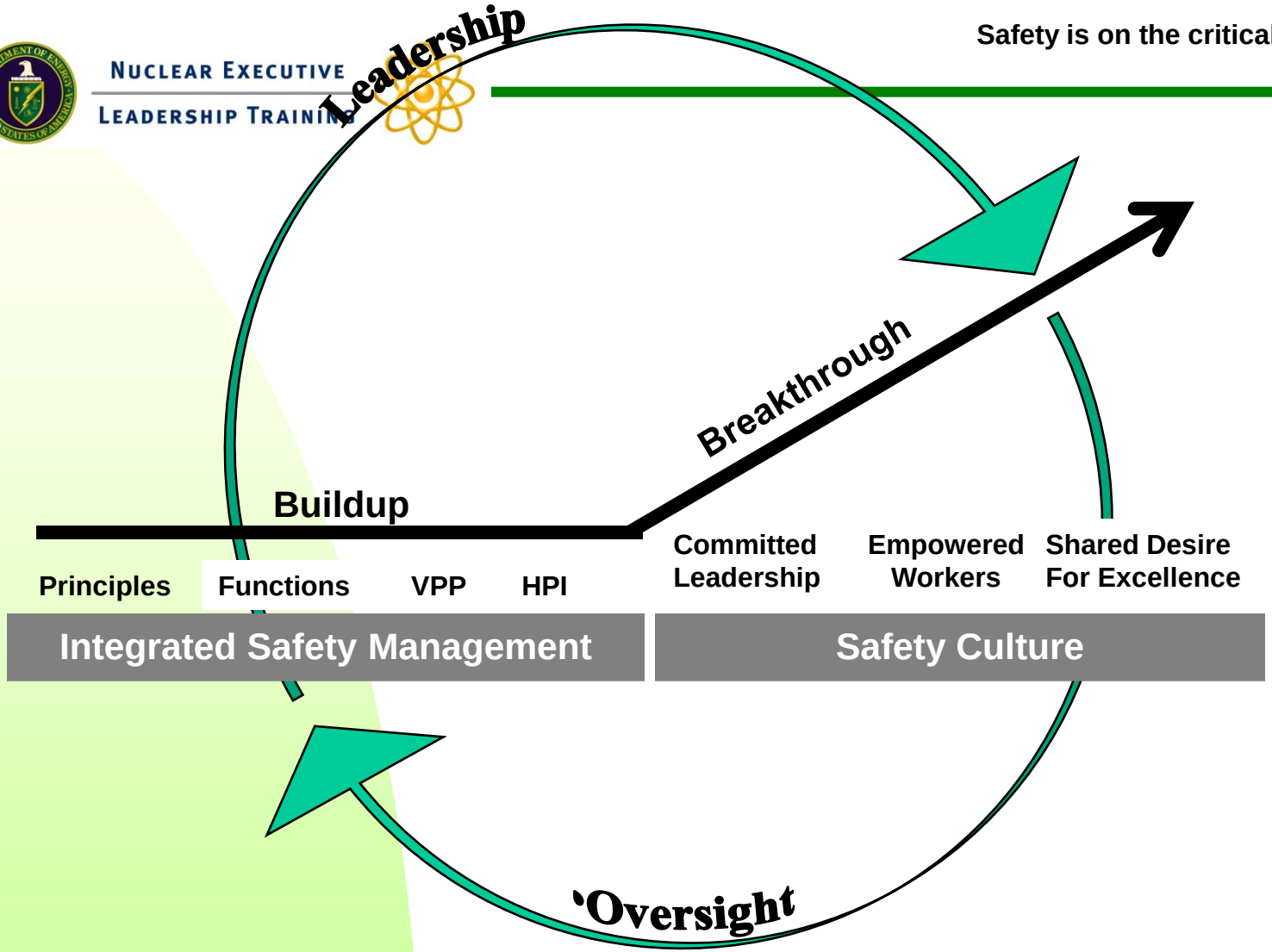

Figure adopted from: Jim Collins, Good to Great; HarperCollins Publishers, NY; 2001.

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Safety Culture

- What is it?
- Why is it important?
- How Do you know if a good safety culture exists in your organization

Definition of Safety Culture

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An organization's values and behaviors, modeled by its leaders and internalized by its members, which serve to make safe performance of work the overriding priority to protect the workers, public, and the environment

EFCOG/DOE ISMS Safety Culture Task Team

Case for Continued Improvement Within DOE: Lessons Learned about Safety Culture

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- Culture has been a key factor in industry events
- Culture is a recognized driver of multiple industry improvements
- A strong positive correlation exists between mission and safety performance
- There is a correlation between cultural maturity and organizational performance
- DOE data identifies cultural elements as significant aspects of events

HSS response to Lessons Learned

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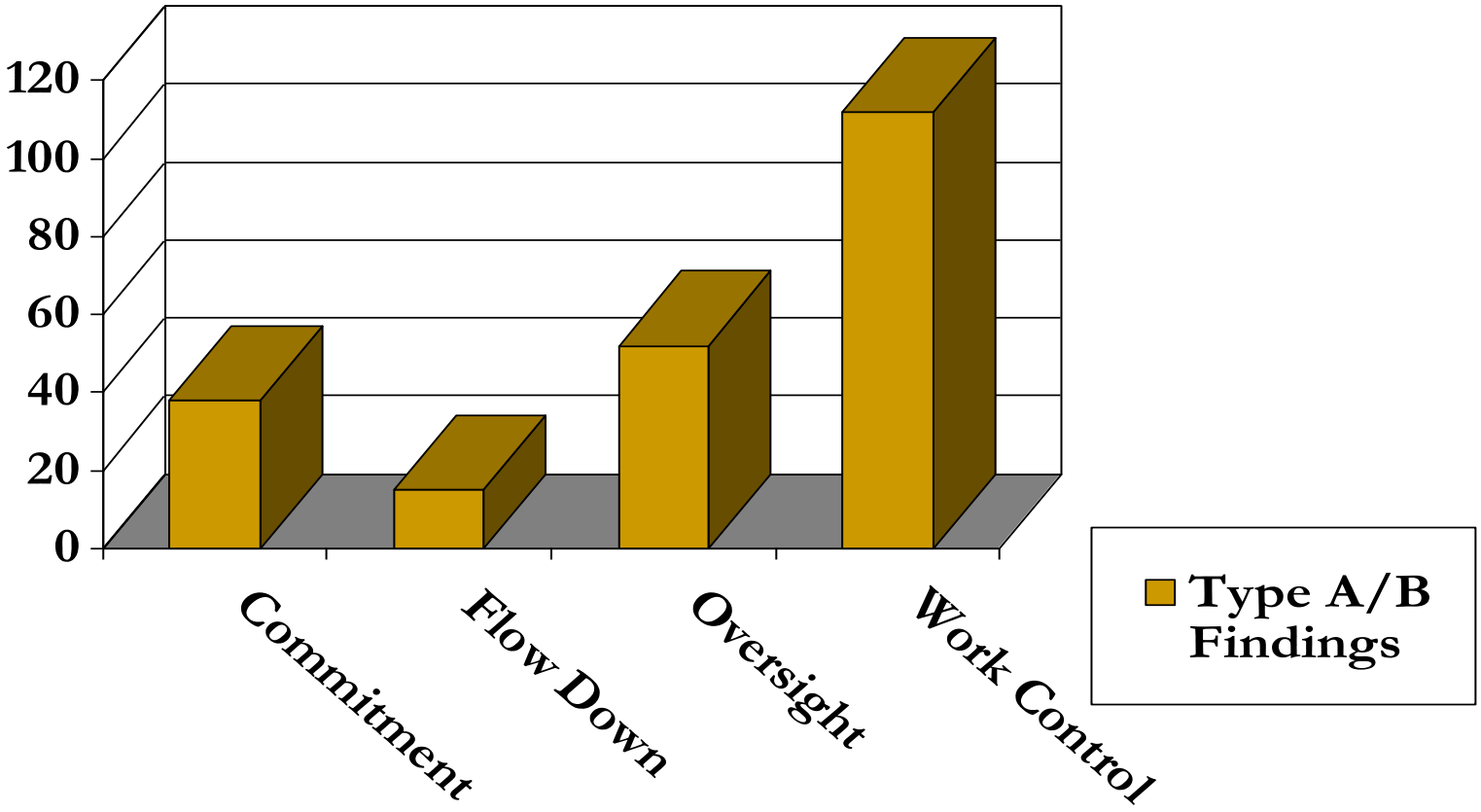
As a result of lessons learned from these events, in 2007, the DOE ISMS Champions identified the strengthening of safety culture as one of their top ISMS related priorities.

Safety Culture and DOE Events (2002-2007)



Review of Significant Events Within the DOE Complex Suggests:

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By improving safety culture DOE and its contractors will:

- Improve safety and work environment
- Reduce the number of safety-related events
- Increase operational performance
- Reduce the cost of operating the facilities

Safety Culture Focus Areas: ISMS Safety Culture Task Team

- Leadership
- Employee/Worker Engagement
- Organizational Learning

Safety Culture Focus Area and Supporting Attributes: ISMS Safety Culture Task Team

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Leadership

- Demonstrated safety leadership
- Clear expectations and accountability
- Management engagement and time in the field
- Conservative decision making
- Staff recruitment, selection, retention, & development

Safety Culture Focus Area and supporting Attributes: ISMS Safety Culture Task Team

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Employee/ Worker Engagement

- Personal commitment to everyone's safety
- Teamwork and mutual respect
- Participation in work planning and improvement
- Mindful of hazards and controls

Safety Culture Focus Area and supporting attributes: ISMS Safety Culture Task Team

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Learning Organization

- Performance monitoring through multiple means
- Use of operational experience
- Trust
- Questioning attitude
- Reporting errors and problems
- Effective resolution of reported problems

Summary

The 'Take Away" Messages on ISM

- It is Working
- We are Staying the Course
- Continuous improvement in safety is a journey
- Improving Safety Culture is a "Break Through" to Improving ISM

BACKUP SLIDES

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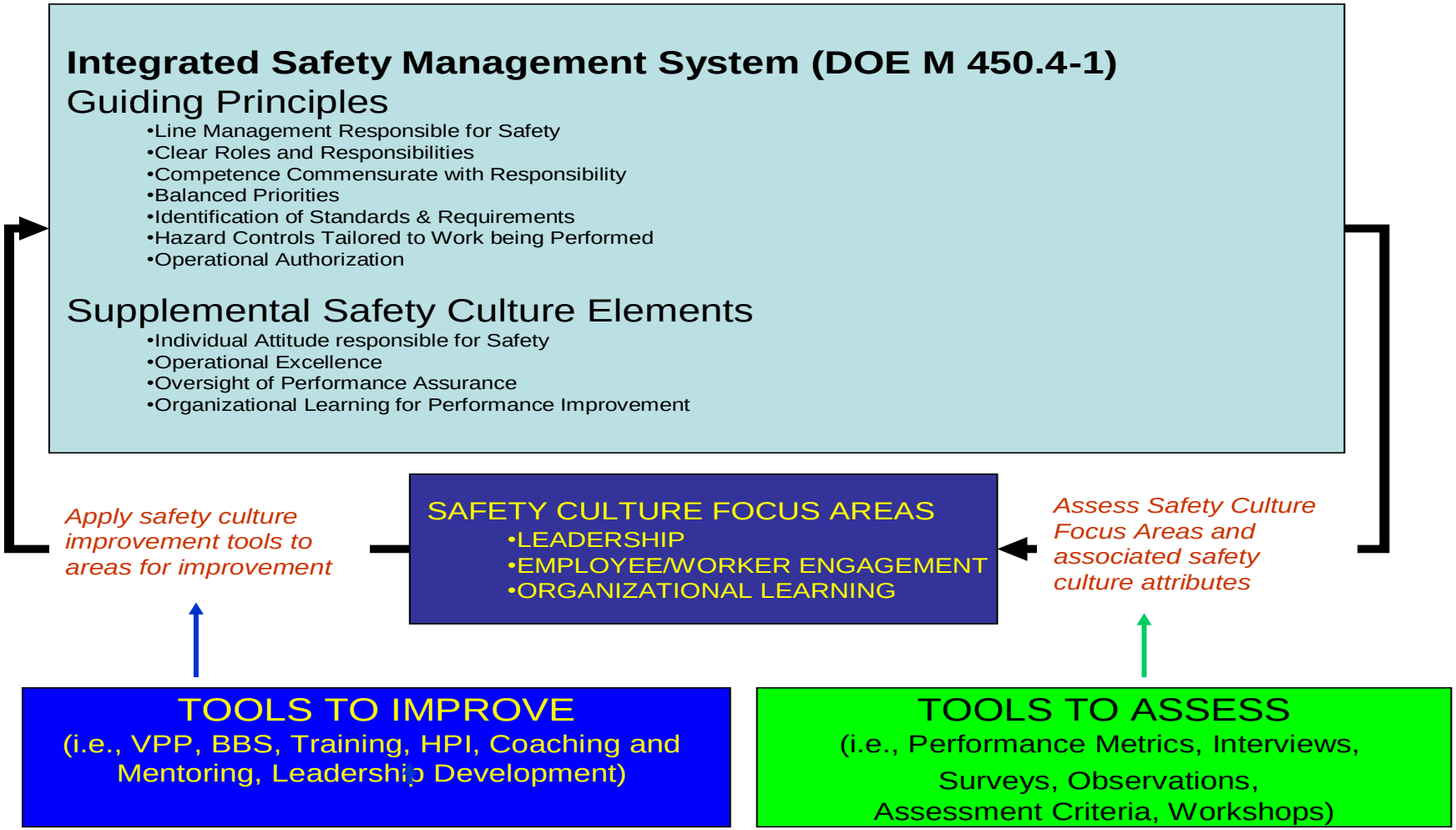
The following backup slides on Safety Culture are NOT part of the presentation but are for reference as needed

ISMS Continuous Improvement Thru Improved Safety Culture



DOE/EFCOG Illustration of the Mechanics of Improving/Maintaining Safety Culture

Suggested Process for Assessing Safety Culture

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Each Organization should:

1. Review the ISM Guiding Principles & Supplemental Safety Culture Elements in Attach 2 ISM Manual (DOE M 450.4-1)

2. Review the Task Team Focus Areas and Attributes

3. Review the Performance Indicators and Assessment Criteria to perform an assessment of the 3 safety culture focus areas

4. Identify Methods to Assess each Safety Culture Focus Area

Suggested Process for Assessing Safety Culture

- Do a root cause analysis – find out why weaknesses in safety culture exist in the organization
- Use focus groups
- Balance the results of the evaluation -- identify organizational & safety culture strengths & weaknesses
- Communicate tangible benefits from the change to individuals or groups

Why a Human Performance Approach?

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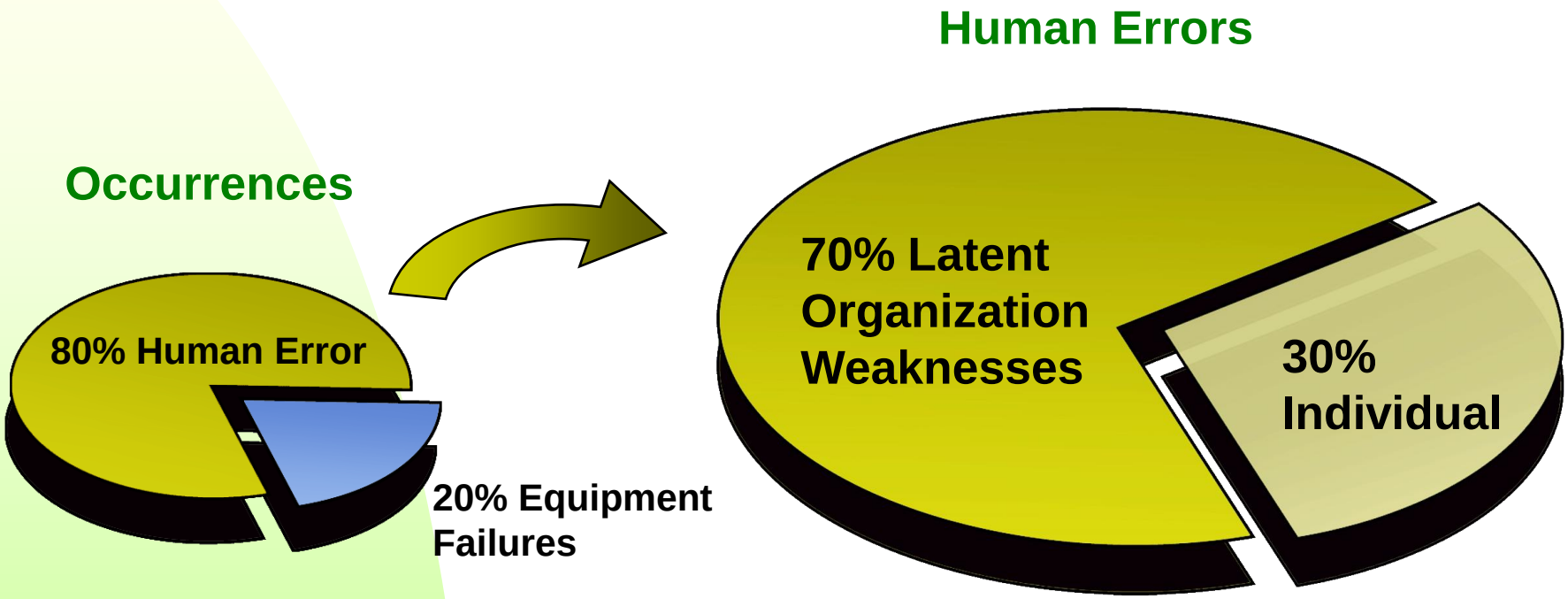
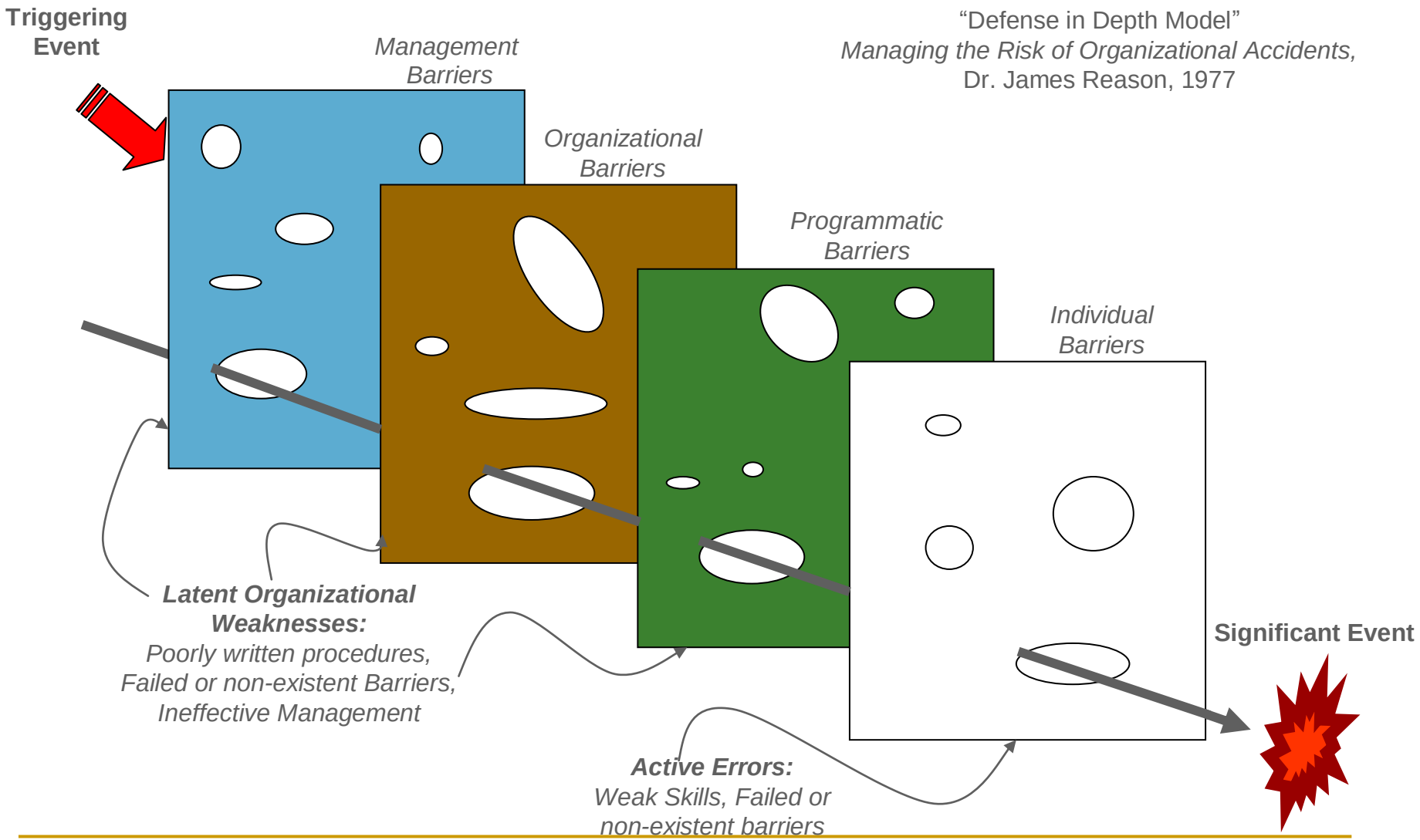


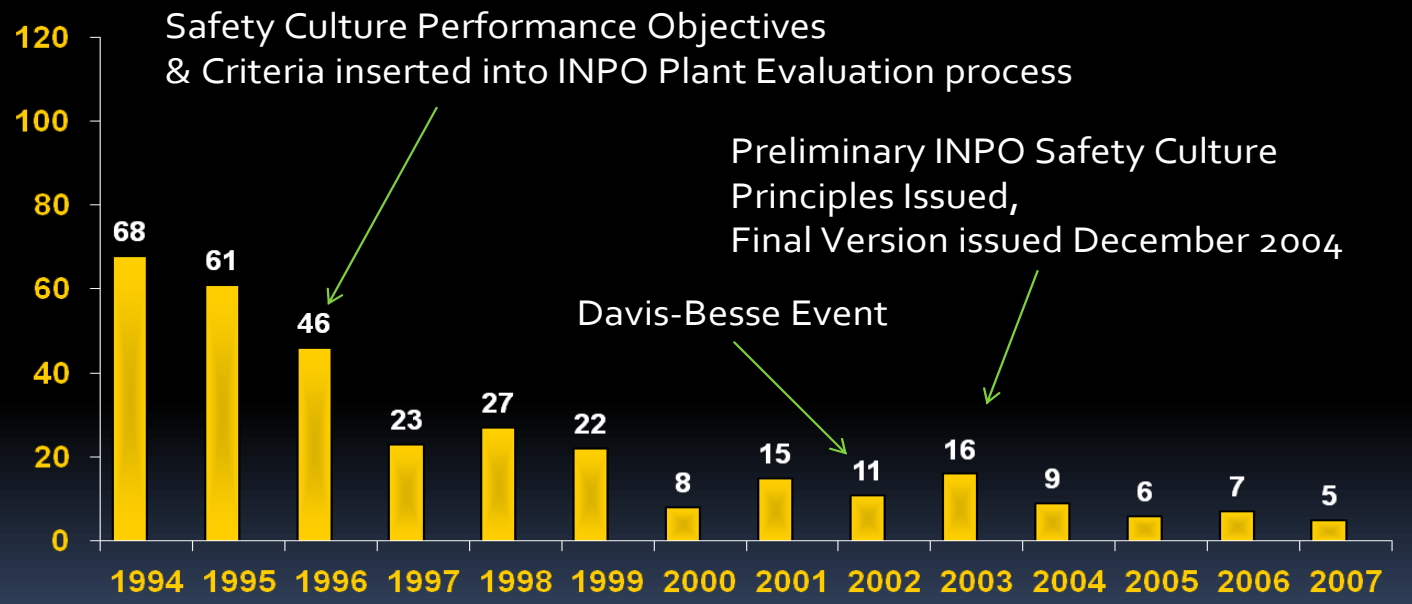
Barrier Analysis



Safety Culture Impacts Operational Performance

NUCLEAR EXECUTIVE

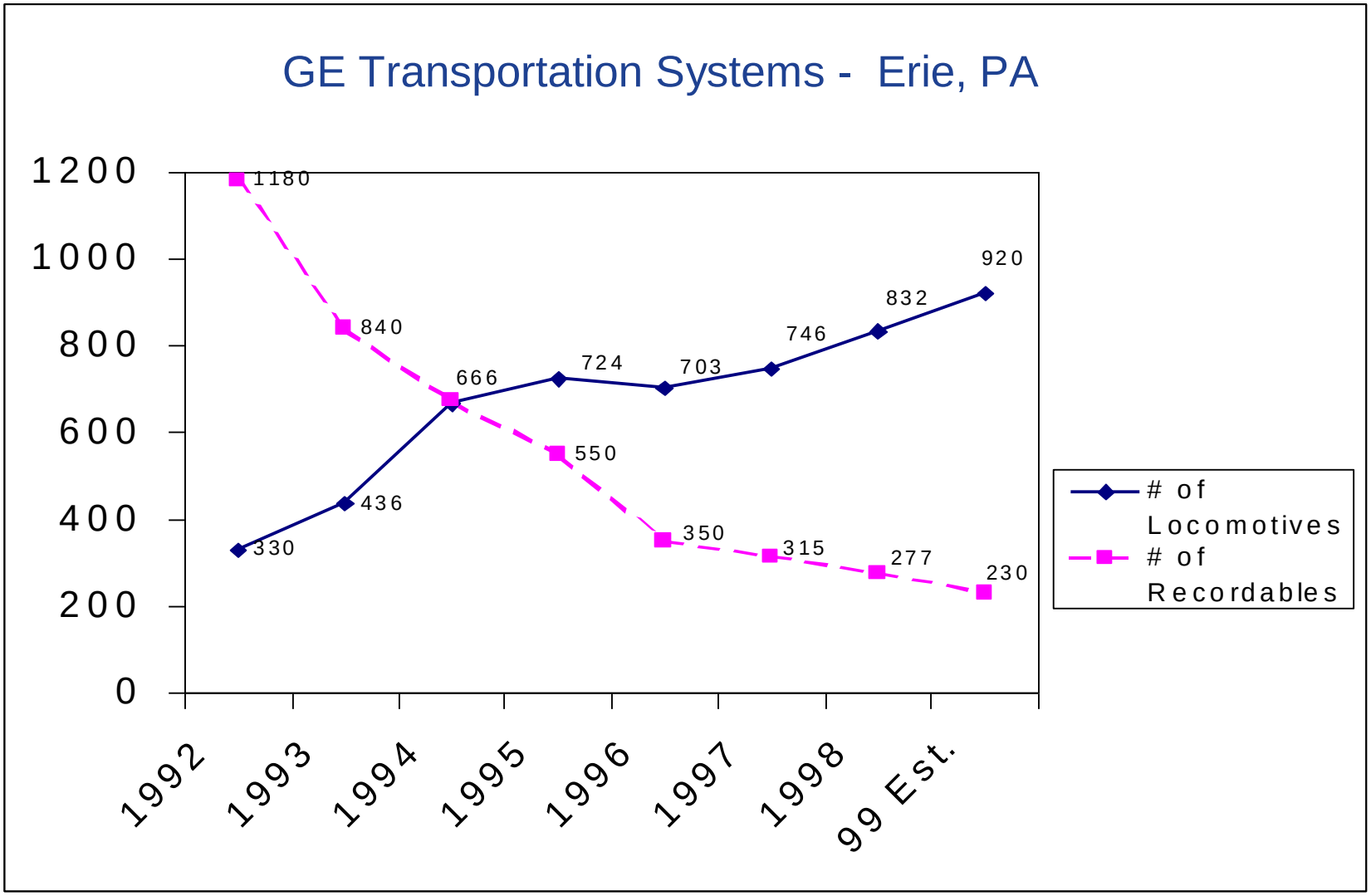
U.S. Commercial Nuclear Industry -- Number of Significant Events



"A major contributor to the U.S. industry's safety success is our collective approach to sharing insights, experience, tools and talent. Highlighted as an industry goal nearly 29 years ago, this cooperation has become a reality and one of the many things that make this industry unique. "

James O. Ellis – President and CEO, INPO

Productivity vs Recordable Injuries



imagination at work